

Abstract of the Disclosure

[0041] A turbine engine component comprising a substrate made of a nickel-base or cobalt-base superalloy, a non-metallic oxide or nitride diffusion barrier layer overlying the substrate, and a protective coating overlying the barrier layer, the protective coating comprising at least one platinum group metal selected from the group consisting of platinum, palladium, rhodium, ruthenium and iridium. The diffusion barrier layer may be a deposited or thermally grown oxide material, especially aluminum oxide. The protective coating may be heat treated to increase homogeneity of the coating and adherence with the substrate. The component typically further comprises a ceramic thermal barrier coating overlying the protective coating. Also disclosed are methods for forming a protective coating system on the turbine engine component by forming the non-metallic oxide or nitride diffusion barrier layer on the substrate and then depositing the platinum group metal on top of the barrier layer.